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CRANE NUCLEAR

CRANE NUCLEAR, INC. 860 REMINGTON BOULEVARD BOLINGBROOK, IL. 60440

Date: 10/31/2017

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-001

Subject: Interim Report for 10 CFR Part 21 Investigation Report
Notification of XOMOX Plug Valve High Torsional Stress in Stem

Dear Sir or Madam:

This letter provides interim notification of Crane Nuclear's Investigation into the subject Part 21 previously submitted to the NRC on 07/11/2017.

The information required for this notification is provided below:

(i) Name and address of the individual or individuals informing the Commission.

Samson Kay
Manager of Sustaining Engineering

Jennifer Bregovy
Manager of Safety and Quality

Crane Nuclear, Inc.
860 Remington Blvd
Bolingbrook, IL 60440

(ii) Identification of the basic component supplied for such facility or such activity within the United States which may fail to comply or contains a potential defect

The plug valve designs provided for XOMOX model figure numbers 037AX, 067EG, and 037. These valves have been identified as used in N-Stamp and/or safety related applications.

(iii) Identification of the firm supplying the basic component which fails to comply or contains a defect.

The valves subject to this notice were supplied by Xomox Corporation (Xomox) prior to 2001. In 2001, Xomox was acquired by Crane Co., which is also the parent company of CNI. At that time, CNI, the entity which is providing this notice to the Commission, began providing support for the subject valves.

(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.

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The stem for the Subject valve models was identified as being undersized based on allowable yield stress analysis of the stem while in torsion. The high stress condition was due to the high torque required to seat/unseat the plug when installed with an Ultra High Molecular Weight Polyethylene (UHMWPE) sleeve material. High friction factor inherent with this material causes torsional stress to exceed the upper limit of yield strength of the valve which could result in fatigue/yielding of the stem, thus preventing the valve from opening and closing while in service.

Historical research performed thus far has not identified any notifications from the customer(s) regarding stem failure of the subject valves, indicating that the valves may still be in operation with no performance related or operating issues.

(v) The date on which the information of such defect or failure to comply was obtained.

Date of Discovery of Defect: 6/5/2017-6/9/2017

(vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part.

Historical research of the XOMOX records is still in process at this time. However, we have currently identified seven (7) sites that have previously ordered these valves.

Xomox / Tufline Order No.	Customer Order No.	Customer	Valve Tag #	Order date or Assy dwg. date	Size, Pressure Class, Fig. #, Code Class
E-64021	73121	DeLaval	76001-135	11/15/1977	3" 150 psi Fig. 037A, Code Class 3
E-64021	73121	DeLaval	76001-134	11/11/1977	4" 150 psi Fig. 067EG, Code Class 3
	25336	Transamerica De Laval, Engine and Compressor div., Oakland, CA	76001-129	8/21/1989	6" 150 psi Fig. 037AX Tandem, Code Class 3
N2943 Item 2 & 2A	144954	Vokes Limited, Henley Park, Suffolk, England. Sizewell "B" Nuclear Power Station,	None	Oct. 31, 1990	6" 150 psi Fig. 037 Tandem, Code Class 3
QN3255	90N-LA-747208	TVA Sequoyah	47W450-1003A, 47W450-1003C ((6) YE0418-FD-4), (6) YE5418-FD-2, (6) YE6418-FD-4)	9/7/1990	4" 150 psi fig, 067
NZX3271	7-20655-1	Pennsylvania Power & Light, Susquehanna	HBC-PL (Customer Item #'s 6.5 & 6.6)	10/10/1990	4" 150 psi fig, 067
NZX3676	P-93NLL-83390C-000	TVA Chattanooga	(6) YE0418-FD-4), (6) YE5418-FD-2, (6) YE6418-FD-4	6/4/1993	4" 150 psi fig, 067, Safety Related 10CFR21 Applies per TVA PO pg 1.

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(vii) The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

Notifications letters have been sent to the affected plants advising them of the condition, and recommending that the sleeve material be replaced with a lower friction Polytetrafluoroethylene (PTFE) material that would significantly reduce the required input operating torque, thereby reducing the risk of failure of the stem material.

XOMOX has been advised to modify design calculations to provide a larger margin for allowable yield strength of the stem material to ensure the stem is properly sized when Ultra High Molecular Weight Polyethylene (UHMWPE) sleeve material is used.

UPDATE 08/24/2017
Crane Nuclear (CNI) has initiate the final phase of the Part 21 research and is currently reviewing over 15,000 documents from the original XOMOX Canada historical archive to determine if any other Nuclear Sites were impacted by the Subject Part 21. The investigation encompasses sales orders spanning from 1970 to 1993 and 2001 to present. CNI expects to complete the review by 10/30/2017.

UPDATE 10/31/2017
Crane Nuclear (CNI) is has completed approximately 40% of the review of the historical archive and will not be able to complete the review by the previously requested 10/30/2017 deadline.

The historical review covers the following scope:

-XOMOX UK DEVON, ENGLAND -Safety Related and N-Stamped Valves/Parts issued between 1987 – 1993

-XOMOX Canada & XOMOX A&M – Safety Related Parts from 1979-1993

-XOMOX Cincinnati TUFFLINE – Safety Related and N-Stamped Valves and Parts issued between 1970-1993

-XOMOX Crane Nuclear – Safety Related and N-Stamped Valves and parts issued from 2001 until present.

Note: Parts and valves were no longer supplied by XOMOX as safety-related or nuclear after 1993 until Crane Nuclear acquired XOMOX in June 29, 2001.

The following sites in the table below were identified as a safety related valves effected by this letter. All sites were supplied to customer "Delaval" which no longer exists. At the current pace of review, CNI expects to complete the review of the historical archive by 1/30/2018.

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Quality Classification	Xemax / J	Customer	Date	Original Customer Name	Original Plant Name	Valve Tag #	Size, Fig. #, Pressure Class, Code Class, Valve Description
Safety Related	69105	62668	28160	DeLaval	TVA (Doesn't show which plant)	A.O. # 99868	6"-037AX EG
Code Class 3, 1977 Ed. / No Add.	E65210	67670	28222	DeLaval	Comanche Peak Units 1 & 2	Serial # 99836B-1, A.O. # 98368, Tag # 76001-129	6"-037AX 150
Code Class 3, 1974 Ed. / No Add.	A63249	62964	28258	DeLaval	Columbia		6"-037AX 150
Code Class 3, 1971 Ed. With all Add.	E-65289	62692	28349	DeLaval	Cleveland Electric	1R47D525A, B 2R47D525A, B	6" 037 AXEG Tandem
Code Class 3, RAD Waste	E-63526	73122	28181	DeLaval	Cleveland Electric	S/N 89810D-1 thru. -4	(4) 4" Fig. 067 EG
Code Class 3, 1974 Ed. / Winter 1976 Add.	E-63527	73121	28181	DeLaval	Comanche Peak Units 1 & 2	760001-135, 76001-134	(2) 3" Fig. 037 AX, (2) 4" Fig. 067EG 150#
Code Class 3, 1974 Ed. / Summer 1976 Add.	E-63735	73161	28824	DeLaval	Midland Nuclear Power Plant Units 1 & 2,	S/N 896730-4	(4) 6" Fig. 037 AXEG Tandem
Code Class 3, 1974 Ed. / Summer 1976 Add.	E-64021	73121	42901	DeLaval	Comanche Peak Units 1 & 2	76001-135, 76001-134	(2) 3"-037 150#, (2) 4"-067 150#
Nuclear Class 3, 1977 Ed. / No Add.	64158	81535	28440	DeLaval	TVA, Hartsville and Phipps Bend Nuclear Plants. Both were cancelled before completion	77K61820006	(12) 6" Fig 037 AX Tandem

(viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.

Not Applicable.

(ix) In the case of an early site permit, the entities to whom an early site permit was transferred.

Not applicable.

Should you have any further questions regarding this matter, please contact Samson Kay, Manager of Engineering at (630) 226-4983 or Jennifer Bregovy, Manager of Quality and Safety at (630) 226-4949.

Regards,

Samson Kay